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ISOPE-2011 Maui Conference

This 21st annual conference features **149 technical and opening general sessions**, and **6 keynote presentations** with top experts from industry, academia and government. After **peer review of the manuscripts** selected from **1,350 abstracts**, some **750 papers** will be presented and discussed by researchers, engineers and managers from more than **51 countries**.

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All indexed by Engineering Index (EI).

* Continue to next session.

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ISOPE (DEEP) OCEAN MINING (& GAS HYDRATES) SYMPOSIUM

67. OCEAN MINING I: Gas Hydrates – Modeling (V. 1)
Tuesday June 21 16:20 Room 9

Chair: H Minagawa, AIST, Japan
Co-Chair: GJ Chen, China Univ of Petroleum, China

Experimental and Modeling Study on Kinetics of Gas Hydrate Formation in Spray Tower
QL Ma, SX Zhang, GJ Chen, China Univ of Petroleum, China

Effect of Clay Particle for Methane Hydrate Formation - Dissociation Behavior
T Kawamura, T Tetsu, T Tsubaki, S Hirabayashi, Y Yamamoto, K Ogasawara, F Kiyono, AIST, Japan

Effect of Micro-Sized Geometrical Constraint on Swapping Phenomena between CH₄ Molecules in Hydrate Cages and CO₂+N₂ Mixed Gas Molecules
H Lee, DO Kim, DY Koh, KAIST; YW Seo, Changwon National Univ, Korea

Static and Dynamic Mechanical Behavior of Gas Hydrate Sediment
XB Lu, XH Zhang, SY Wang, QP Li, Inst of Mechanics, CAS, China

77. OCEAN MINING II: Gas Hydrates – Geotechnical (V. 1)
Wednesday June 22 08:00 Room 9

Chair: K Suzuki, AIST, Japan
Co-Chair: QP Li, CNOOC, China

3D Stratigraphic and Structural Analyses of Gas Hydrate-bearing Turbiditic Sequences Demonstrating the Pleistocene Tectonic-controlled Forearc Sedimentation along the East Nankai Trough
K Egawa, K Suzuki, AIST; T Furukawa, T Saeki, Japan Oil, Gas & Metals National Corp, Japan

Application of Nonlinear Elastic Constitutive Model to Artificial Methane-hydrate-bearing Sediment Sample
K Miyazaki, K Aoki, N Tenma, Y Sakamoto, AIST; T Yamaguchi, Toho Univ, Japan

Capillary Pressure Measurement of Unconsolidated Turbidite Sediment Sampled from Methane Hydrate Bearing Zones near NE-Nankai Trough
K Suzuki, H Narita, AIST, Japan

Deformation of Methane Hydrate Bearing Sand during Dissociation

M Hyodo, Y Nakata, N Yoshimoto, J Yoneda, Y Imamura, Yamaguchi Univ, Japan

Localized Plane Strain Deformation of Depressurized Methane Hydrate-bearing Sand

J Yoneda, M Hyodo, Y Nakata, N Yoshimoto, Y Imamura, Yamaguchi Univ, Japan

Geological and Geochemical Characteristics of Gas Hydrate in the Qilian Permafrost, Qinghai Province, China [Proceedings only]

Lu, Z, Institute of Mineral Resources, CAS, China, et al

86. OCEAN MINING III: Gas Hydrates – Assessment (V. 1)
Wednesday June 22 10:30 Room 9

Chair: JRMS Oliveira, Military Inst of Engineering, Brazil

Co-Chair: T Komai, AIST, Japan

Geotechnical Risk Analysis of Submarine Slopes with Gas Hydrates in Amazon Basin

JRMS Oliveira, WJO Menezes, MES Marques, Military Inst of Engineering, Brazil

Natural Gas Hydrate Accumulation Simulation in Porous Media Using a One-dimensional Device

CY Sun, LT Chen, Q Yuan, GJ Chen, China Univ of Petroleum, China

Risk Assessment for CO₂ Capture and Geological Storage in Offshore Environment

T Komai, Y Sakamoto, A Tanaka, AIST, Japan

Characterization of Hydraulic Permeability and Pore Size Distribution of Methane-hydrate-bearing Sediment Using Proton Nuclear Magnetic Resonance Measurement

H Minagawa, K Egawa, Y Sakamoto, T Komai, N Tenma, H Narita, AIST, Japan

Development of the Geo-mechanical Simulation Code ‘COTHMA’

M Kakumoto, N Tenma, Y Sakamoto, K Miyazaki, K Aoki, AIST; J Mori, West Japan Engineering Consultants, Japan

Simulation of a Laboratory-scale Experiment for Flow Behavior of Supercritical CO₂ in Porous Media

Y Sakamoto, AIST; Y Suzuki, Toho Univ; A Tanaka, N Tenma, T Komai, AIST; T Yamaguchi, Toho Univ, Japan

Formation Efficiency of CO₂ Hydrate under Low Temperature and Low Pressure by Ultrasonic Mist

S Hirabayashi, National Inst of Advanced Industrial Sci & Tech; M Takeuchi, A Murata, Nihon Univ; Y Yamamoto, National Inst of Advanced Industrial Sci & Tech, Japan

96. OCEAN MINING IV: Systems & Tech 1 (V. 1)
Wednesday June 22 14:00 Room 9

Chair: SJ Liu, Central South Univ, China

Co-Chair: S Hong, Maritime & Ocean Engineering Research Inst; Korea

Dynamic Analysis and Path Tracking Control of Tracked Underwater Miner in Working Condition

QJ Han, SJ Liu, D Yu, Central South Univ, China

Dynamic Analysis of an Articulated Tracked Vehicle on Undulating and Inclined Ground

HW Kim, S Hong, CH Lee, JS Choi, TK Yeu, Maritime & Ocean Engineering Research Inst, Korea

A Study on the Driving Performance of Tracked Vehicle on an Inclined Plane According to the Position of Buoyancy

CH Lee, HW Kim, S Hong, Maritime & Ocean Engineering Research Inst, Korea

Qualification Tests on Underwater Mining System with Manganese Nodule Collection and Crushing Systems

S Rajesh, AA Gnanaraj, A Velmurugan, R Ramesh, P Muthuvel, MK Babu, NR Ramesh, CR Deepak, MA Atmanand, NIOT, India

Reliability Based Design Optimization of Deepsea Miner on Seafloor Sediment Using Non-parametric Estimation Method

JS Choi, S Hong, HW Kim, CH Lee, Maritime & Ocean Engineering Research Inst; HB Lee, SB Chi, KORDI; TK Yeu, Maritime & Ocean Engineering Research Inst; TH Lee, Hanyang Univ, Korea

106. OCEAN MINING V: Systems & Tech 2 (V. 1)
Wednesday June 22 16:20 Room 9

Chair: CH Yoon, Korea Inst of Geoscience & Mineral Resources,

Korea
Co-Chair: P Vlasak, Inst of Hydrodynamics, Czech Republic

Establishment of a New Improved Dynamic Model of the Total Deep Ocean Mining System and Its Integrated Operation Process Simulation

Y Dai, SJ Liu, Y Li, Central South Univ/Changsha Research Inst of Mining & Metallurgy, China

The Preliminary Front-End Engineering and Design of Manganese Nodules Mining Support Vessel

DH Kang, HD Kang, JH Han, KM Lee, YT Oh, SG Lee, Daewoo Shipbuilding & Marine Engineering; SH Park, Korea Ocean Research & Development Inst, Korea

Study on Active Heave Compensation System of Deep-sea Mining Based on Dynamic Vibration Absorber and Its Feedback Control

LJ Li, SJ Liu, Central South Univ/Changsha Research Inst of Mining & Metallurgy, China

Hardware-in-the-loop Simulation System and Its Visual Monitoring of Heave Compensation

H Zheng, SJ Liu, N Yang, Q Hu, Central South Univ/Changsha Research Inst of Mining & Metallurgy, China

Model Test of Heave Compensation System of Deep-ocean Mining

Q Hu, SJ Liu, H Zheng, Central South Univ/Changsha Research Inst of Mining & Metallurgy, China

Dynamic Analysis of Seabed-mining Machine-flexible Hose Coupling in Deep Sea Mining

Z Wang, QH Rao, Central South Univ, China

Shallow Lifting Test for the Development of Deep Ocean Mineral Resources in Korea

CH Yoon, JM Park, JS Kang, YJ Kim, YC Park, SG Park, CR Kim, SS Kang, SB Kim, WT Kim, SK Kwon, BS Ahn, Korea Inst of Geoscience & Mineral Resources, Korea

Swimming Behavior of Single Particle and Group Particles in Vertical Lifting Pipe

N Yang, GG Chen, DS Tang, X Jin, H Xiao, Changsha Research Inst of Mining & Metallurgy, China

Flow Behaviour of Coarse-grained Slurries in Pipe

P Vlasak, Z Chara, Inst of Hydrodynamics, Czech Republic; J Sobota, Univ of Environmental & Life Sciences, Poland

Two-phase Vertically Upward Transport of Silica Sands (Mesh 8-10 and 30-40) in Dilute Polymer Solution: Drag Reduction and Effects of Concentration

K Lee, Kiewit Southern; JS Chung, ISOPE, USA

116. OCEAN MINING VI: Deep-Ocean Minerals 1 (V. 1)

Thursday June 23 08:00 Room 9

Chair: GS Roonwal, Inter University Accelerator Centre, India

Co-Chair: SJ Liu, Central South Univ, China

Seamount Crusts and Cobalt-Platinum Rich Crust Resources in the Indian Ocean

GS Roonwal, Inter University Accelerator Centre, India

Activities of the Interoceanmetal Joint Organization, Problems of the Application of the United Nations International Framework Classification for Reserves/Resources

J Franzen, Interoceanmetal Joint Organization, Poland

Current Status of Manganese Nodule Exploration in the German License Area

C Rühlemann, U Barckhausen, T Kuhn, Federal Inst for Geosciences & Natural Resources; K Mewes, S Kasten, Alfred Wegener Inst for Polar & Marine Research, Germany

Development of Methods and Equipment for the Exploration of Manganese Nodules in the German License Area in the Central Equatorial Pacific

T Kuhn, C Rühlemann, M Wiedicke-Hombach, Federal Inst for Geosciences & Natural Resources, Germany

A Study on the Relationship of Manganese Nodule Distribution and Characteristic of Deep-sea Sediments on the Northeastern Pacific

SB Chi, CM Yoo, YT Ko, SJ Ju, KORDI, Korea

Physical Properties of Polymetallic Nodules and Deep Sea Sediments

I Dreiseitl, Interoceanmetal Joint Organization; R Bednarek, West Pomeranian Univ of Tech, Poland

126. OCEAN MINING VII: Deep-Ocean Minerals 2 (V. 1)

Thursday June 23 10:30 Room 9

Chair: C Rühlemann, Federal Inst for Geosciences & Natural Resources, Germany

Exploration and Exploitation of Minerals in Papua New Guinea - An Overview [Oral presentation]
M Singh, Mineral Resources Authority, Papua New Guinea

Strategic and Economic Metals for Emerging Technologies Found in Marine Ferromanganese Nodules and Crusts

J Hein, US Geological Survey, USA; A Koschinsky, Jacobs Univ Bremen, Germany; K Schmidt, Jacobs Univ Bremen/GeoForschungsZentrum, Germany; T Conrad, US Geological Survey, USA; B Alexander, M Bau, Jacobs Univ Bremen, Germany

Experimental Studies on Rare Metal Collection from Seawater

N Nakazawa, Systems Engineering Associates; M Tamada, N Seko, Japan Atomic Energy Agency; K Ooi, National Inst of Advanced Industrial Sci & Tech; S Akagawa, Systems Engineering Associates, Japan

Study on the Development and Application of Economic Evaluation Software for Seafloor Massive Sulfide Deposits

Y Li, C Liu, H Li, FQ Xiao, YY Chen, Central South Univ, China

UV-fluorescence Sensing System for Seafloor Massive Sulfides

H Nagano, D Okanishi, N Nakatani, R Arai, T Yamazaki, Osaka Prefecture Univ, Japan

136. OCEAN MINING VIII: Environment (V. 1)

Thursday June 23 14:00 Room 9

Chair: Y Nakajima, National Maritime Research Inst, Japan

Application of Shifted Excitation Raman Difference Spectroscopy (SERDS) for In-situ Investigations in the Deep Sea

H Ahmad, A Kolomijeca, K Sowoidnich, Tech Univ Berlin, Germany

A Trial of Ecological Risk Assessment for Development of Seafloor Massive Sulfides

Y Nakajima, NMRI; R Arai, N Nakatani, T Yamazaki, K Otsuka, Osaka Prefecture Univ, Japan

Fate of Bacterial Mat in Anoxic Environment for Development of Prediction Model for Seafloor Environmental Assessment: Second Report

Y Nakajima, J Yamamoto, National Maritime Research Inst; M Ikemoto, R Arai, N Nakatani, T Yamazaki, K Otsuka, Osaka Prefecture Univ, Japan

143. OCEAN MINING IX: Mineral Processing (V. 1)

Thursday June 23 16:20 Room 9

Chair: KH Park, Korea Inst of Geoscience & Mineral Resources, Korea

Co-Chair: IZ Bunin, Research Inst of Comprehensive Exploitation of Mineral Resources, RAS, Russia

Kinetics of Cobalt (II) Extraction from Sulfate Medium by DDPA

P Xing, CY Wang, Beijing General Research Inst of Mining & Metallurgy, China

Structural and Chemical Transformations of Pyrrhotite and Pentlandite: On the Possibility of Application of High-power Nanosecond Pulses to Flotation Separation of Sulfide Minerals

IZ Bunin, VA Chanturiya, AT Kovalev, IA Khabarova, EV Koporulina, Research Inst of Comprehensive Exploitation of Mineral Resources, RAS, Russia

Treatment of Metal Wastes with Deep Sea Manganese Nodules

CW Nam, KH Park, Korea Inst of Geoscience & Mineral Resources, Korea

Recovery of Molybdenum from the Deep Sea Manganese Nodules

KH Park, PK Parhi, CW Nam, Korea Inst of Geosciences & Mineral Resources, Korea

The Significance of the Price of Nickel in the Determination of the Economic Equilibrium between the Marine Mineral Resources of Manganese Nodules and Cobalt Crusts in a Mutually Exclusive Scenario

S Martino, LM Parson, National Oceanography Centre, UK

